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R Dawson, F.F.C.S., F.C.I., Secretary-Manager and Editor

Telephone 2 - 0700

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EDITORIAL

Taxation Plus

There is not a Canadian citizen who does not expect to be taxed and taxed a good deal heavier than heretofore in order to pay for Canada's war effort, but we doubt if there has ever been more criticism than has been the case in connection with the increase in the Ontario Government Corporation Tax. This tax was increased last year from one to two per cent., and this year it has again been increased from two to five per cent. That is bad enough, but when the increase was made retroactive, in some cases to 1938, then it becomes what some people describe as an unfair tax. 1938 bills have been paid, or at least business men thought they had, and then this bombshell is fired by the Ontario Government.

Further, the greatly increased taxes by the Dominion Government are not allowed to be deducted from income, and yet how can these war taxes, when they have to be paid, be considered part of income. The Ontario Government claims that the increased Corporation Tax is necessary for the reason that income from succession duties has fallen below expectations; but, surely, the Provincial Government did not expect that the income from such duties would remain at the very high level for very long and income derived from such duties should certainly not have been considered as part of current revenue. At least, that is the opinion of most businessmen. The retroactive feature of the Corporation Tax is the part that hurts most, and, in the case of a company whose fiscal year ends on January 31st, it hurts terribly, for, in such cases, a company is taxed for eleven of the twelve months in 1938. It will readily be seen that this retroactive feature means that the tax will have to be taken out of current revenue, which means, further, that the increase will amount to, when it is remembered that fewer deductions are allowed before the tax is calculated, to in some cases, 700 per cent. That is a case of taxation, plus. It does seem that here is a tax which will do considerable harm to industry and, as such, is an unfair tax.

The Late Lord Tweedsmuir

Just as we go to press comes the very sad news of the passing of Baron Tweedsmuir, Governor-General of Canada. Many lines of regret at his passing will be penned within the next few days, lines which will be read much more widely than these, but the occasion cannot be allowed to pass without adding a tribute to the memory of this "Great and Good Man," as Prime Minister Mackenzie King described him. As a man of letters, as a statesman, as a historian he will long be remembered; but to the rank and

file of Canadian citizens, it will be as a simple man of the people he will best be remembered. To those who had been privileged to meet him, if only for a brief moment, he possessed a simple dignity and charm and the capacity for understanding that few men possessed, and probably no Governor-General of this country so endeared himself to the hearts of the people as did Lord Tweedsmuir. From the very commencement of his sojourn in this country he became at heart a Canadian in very truth, and truly Canada and the Empire has lost a "Great and Good Man." Not only Canada and the Empire, but the whole world is much the poorer for his passing.

Across the Secretary's Desk

By this time most of you will have read that the Private Bill in the Ontario Legislature to incorporate the Society in Ontario was rejected by the Private Bills Committee after having passed its first reading. Although all the outside opposition to the Bill had been eliminated and, in fact, the Bill was strongly supported by the Institute of Chartered Accountants of Ontario, but the members of the Committee saw fit to reject the Bill. Some of the arguments advanced against it by the members of the Committee were somewhat fantastic and altogether too far from the truth and no good purpose can be served by enumerating them here.

Naturally we were disappointed, but we are by no means licked. The Special Committee has other plans which will likely be discussed and acted upon by the Ontario Council in the immediate future. We made some good friends among the members of the Private Bill's Committee and were advised to "come again at the next session." One thing I would like to point out, and that is that we were advised not to try to exert any influence on members by lobbying. We did not. We concentrated on eliminating outside opposition, which we did very effectively and without much trouble. We presented our Bill honestly and on its merits, and in that connection we can have no regrets. I would like to pay a real tribute to the Institute of Chartered Accountants of Ontario and especially to Mr. J. W.Taylor and to Mr. G. Jephcott, the President and Vice-President of the Institute, respectively. Mr. Taylor stood before the Committee and very eloquently made a plea for the passage of the Bill, but to no avail. Our honest opinion is that not even a Chamberlain or a Churchill could have changed the result. Our hats are off, however, to the two gentlemen who left their business to support our Bill, and to their extreme kindness in many other respects. Just one word more on this subject. Do not be discouraged. Nothing worth while was ever gained without a fight and, believe me, we intend to fight.

And now to things of a more pleasant nature. Recently I attended two meetings, one in London and one in Hamilton, which very definitely opened my eyes. These were different types of meetings, in that no guest speaker was present. The meetings were purely discussion meetings and the questions discussed were those sent in by members. The Vancouver Chapter has very successfully held similar meetings for a long time, and I

believe such meetings are here to stay. At both these meetings the attendances were well above the average, proving that this type of meeting appealed to the members, and, in my humble opinion, everyone present gained a great deal. The discussions were quite long and informative and I heartily recommend that each Chapter take up similar meetings. Another matter on which a favourable report can be made is concerning Student Sections or Study Groups within the various Chapters in Ontario. Niagara Peninsula, Hamilton, Windsor and London have already made a start, and Kitchener is scheduled to do likewise very shortly. These Student Sections or Study Groups are designed for student members, but in many instances senior members are attending in ever increasing numbers and the real interest being shown in these meetings augurs well for the future. These Students are those who will guide our destinies in the future and we cannot pay too much attention to their needs. We urge all Chapters to take up this form of meeting for students immediately. Do not wait until next season. R. D.

New Members

Montreal Chapter.

Stanley G. Loucks, Brandram-Henderson Ltd., Montreal.
Victor MacDonald, Henry Gatehouse & Son Inc., Montreal.
Dominique Busque, Dominion Arsenal, Quebec, P. Q.

Hamilton Chapter.

Robert E. Wodehouse, Semmens-Evel Casket Co., Hamilton.
J. Fred Murray, Steel Company of Canada Ltd., Hamilton.

Fort William-Port Arthur Chapter.

C. Parsons, Kelloughs' Dairy Ltd., Fort William, Ont.

Personal Notes

Heartiest congratulations to Hugh N. Bickmore, the very efficient and courteous Secretary-Treasurer of the Fort William-Port Arthur Chapter, on his Christmas present. It's a girl.

It is with regret that we announce the resignation from the Society of Mr. S. E. LeBrocq, Comptroller of the Steel Company of Canada Ltd., at Hamilton. Mr. LeBrocq is a Past President of the Society and a Past Chairman of the Hamilton Chapter. Mr. LeBrocq finds that increasing pressure of business makes it impossible for him to devote any time to the interests of the Society, hence his resignation.

Frank Landeg, popular director of the Hamilton Chapter, has been appointed as assistant to Mr. S. E. LeBrocq, Comptroller of the Steel Company of Canada. Congratulations, Frank.

Literature Received

Process Costs.

The Cost Accountant. December, 1939.

A short, but very illuminating article on Process Costs, showing samples of forms used.

Costing for Public Works.

The Cost Accountant. December, 1939.

Describes a system of Costing for Public Works with the aid of sorting and tabulating machines.

Colliery Costs.

The Accountants' Magazine. December, 1939.

A complete article on Colliery Costs and a very welcome addition to far too little literature published in this connection.

The Manufacturing Specification.

The Chartered Accountant in Australia. December, 1939.

Deals with the various types of Production or Manufacturing Orders issued to the factory and the recording of the actual performances in the plant.

Ledger Posting in Mechanized Accountancy.

The Accountants' Magazine. December, 1939.

Describes the actual posting to ledgers and the forms used in a system of mechanized accounting.

A System of Costing and Budgetary Control for Hospitals.

The Accountant. January 13, 1940.

A short, but very good article on the subject outlined above.

Further Thoughts on the Management Aspect of Accounting Control.

Suggests a marginal income technique and deals with its application to interior or internal problems.

Distributor Accounting Procedure for Planned Profit Control.

N.A.C.A. January 15, 1940.

Describes what the Accounting Department can do to assist the Sales Department in its job of distributing the companies products.

Can Standard Costs Be Standardized?

N.A.C.A. February 1, 1940.

An analysis of Standard Costs, and describes how such costs may be standardized as to fundamentals.

Basis Standard Cost Accounting Employing the Use of Cost Ratios.

N.A.C.A. February 1, 1940.

Describes the use of cost ratios and how Basis Standard Costs are carried through the books.

Chapter Notes

Methinks, quoth our loquacious scribe to the Right Honourable Walton Blunt, Chairman of Montreal Chapter, methinks 'twere well to circumvent the urge toward prolix propaganda when making jottings of our last two meetings, the "plant visit" and the "annual smoker." Our Chairman, being of practical mind and mien, said: "You sed it, kid—besides a lot of wives and sweethearts read our Chapter Notes, and I am sure that they would not like to learn that the light of their life had helped to swig down the gallons of liquid refreshment (water, soft drinks and a little beer) used as tonsillitic varnish at the Smoker." "Neither," said he, upon remembering that he was an honourable business man, "neither would they be interested in knowing that a similar quantity, pro rata, of 'cough medicine' had been administered to our patients attending the clinic held in Dawes' Brewery, Montreal, on Friday, December 15th, 1940." Which brought about the following computation:

If approximately 200 attended the Smoker, and if there are 2 pints to a quart, and if there are 4 quarts to a **gal**—how many **gals** attended the Smoker? (Oh, yeah, we forgot to mention that each attender gulped to the tune of an average 2.5 pints). Answer: 200 divided by 2 = 100; 100 divided by 4 = 25; 25 multiplied by 2.5 = the **gals** present at the meeting. In other words, the batting average for Montreal Chapter is only a mere .3125 gallons per member. Any wife or sweetheart who objects to a man drinking down less than a third of a gallon of beer should be ashamed of herself. Why, I knew a man once who , , , , , well, let's get back to our Chapter Notes.

As mentioned previously, on Friday, December 15, 1939, a flock of the boys dropped in at the Dawes Brewery to find out how the bottles were washed. It seems that a poor little bottle is given a bath. It then moves along to a steaming department, from whence it comes forth clean and refreshed for its future battle with life. A couple of automatic fingers pick it up and set it down on a conveyor which moves along to the filling station. A tube is inserted clear down the neck and the little bottle gets filled from the bottom (filling from the top would necessitate employing an expert froth blower). Our bottle then slides around a machine which puts on the cap, wraps it in gaudy trimmings and starts it on its way to mine host's cellar. Visiting a brewery is a most pleasant experience; especially when the brewery be Dawes, and the welcome—refreshing. We owe a debt of gratitude to National Breweries Ltd., for a delightful afternoon.

Of the Annual Smoker, much may be said. A group of the lads from Granby, Quebec, were loyal enough to drive some fifty miles through a blizzard to attend. They also drove back to Granby the same night, which doesn't say much for our ability to entertain "too well, but not too wisely." The night of Friday, December 12th, 1939, will go down in our memories as a tribute to Donald Peddie, the organizer of the Smoker. The Windsor Hotel, in Montreal, may never again resound to such songs of cheer. The entertainment was superb, the "Information Please" event, immense. The prize question of the evening being: "What is a person who crosses the

Atlantic from Halifax to Liverpool and back in two weeks without washing?" The answer: "A dirty double-crosser." The prize, a goldfish bowl full of **invisible** Guatemalian fighting fish—if you looked close enough you **might** see their eyes. Some of the boys actually **could** see their eyes). Of such things are successful Smokers comprised. Little more need be said—so, for the nonce "Au Revoir."

At 6.30 p.m., on the evening of Friday, January 26th, 1940, Chairman Walton Blunt, of Montreal Chapter, together with some forty of his stalwarts, refreshed the inner man in the oaken-panel-work atmosphere of The Engineers' Club. The conversations overheard around the various tables ran the gamut of topics usually discussed where men gather together amid the gentle gleam of polished silverware, the pleasing tinkle of glassware, spotless naperies, and the culinary art which tickles the olfactories and blends so sweetly with the gastric juice.

At 8 p.m. of the same evening, together with those for whom a dinner at the Engineers' Club holds not the quality of magnetic influence, we gathered to hear our Guest Speaker, Mr. S. W. Fairweather, Chief of Research and Development of the Canadian National Railways, who spoke on "The History of Railway Accounting." Montreal Chapter can now understand that there is much more to the art of railway accounting than the figure which represents the "surplus" (or the deficit") at the year end, and that in order to understand the basic principles of railway accounting it is absolutely necessary to understand first the gentle art of "Railroading."

There is some intangible quality about a railwayman which sets him apart from all other men—that quality which permits him to speak in a language that all men can understand. Mr. Fairweather reflected this quality to an unusual degree by such statements as that offered in the most friendly way when he said: "Many railway workers who are doing what is actually cost accounting work would be both surprised and insulted if they were called 'Cost Accountants'—you see, we have different names or titles for these jobs." It seems that the general public would call any employee operating a train a "Trainman," but that would be one of the gravest insults if anyone called an "Engineer" a "Trainman." All of which leads to the realization that railwaymen live in a world apart, inasfar as technical titles are concerned.

Railways perform a service which no other means of transport can meet. For instance, we learned that wheat from the far West is transported for less than the cost of the service, and that in order to compensate for this loss certain other commodities must be given a higher freight rate. The trucking concerns had taken advantage of this condition by taking such freight as had to be overtaxed by the railways to equalize their earnings. The railways were controlled by a veritable maze of laws which did not affect the trucking industry, but which had proven their worth because of the protection brought about by their observance. As an illustration, Mr. Fairweather suggested the great toll in death and injury brought about by the use of other means of transportation. It was suggested that if the same restrictions were applied to the trucking industry as is applied to the railways, not only would this tremendous toll cease, but that the costs of operation for the trucking companies would rapidly mount.

It would seem, from our speaker's remarks, that the railways are beset from many sides; the truck takes away from the railway; the horse and cart supplants the truck; and the . . . . well, that well-known verse might well apply:

"Big fleas have little fleas
Upon their backs to bite 'em,
And little fleas have lesser fleas,
And so ad infinitus—"

Mr. Fairweather did not quote these lines—but he might have used them to good effect. Our speaker closed with the suggestion that it might be a good idea to have some single controlling body to govern the carriage by freight. By such means would the railway problem be solved.

Montreal Chapter gained much from this meeting—may we have more of this type of speaker in the future.

Hamilton.

On January 24th the chapter members, about fifty-five in number, heard a very splendid talk by Mr. Bernard H. Yardley on "A Major Factor in Industrial Costs." Mr. Yardley's talk is published elsewhere in this issue and it is sufficient to say that he lived up to all the advance notices.

His talk was thoroughly practical and, at the same time, educational, and it is safe to say that no member left the meeting without the feeling that he had learned much.

For the February 7th meeting no guest speaker was presented, but over sixty members and friends attended for a Discussion Night, and to say it was enjoyed would be putting it mildly.

About eight questions had been sent in by members, and these were discussed in turn in a very thorough manner. During the discussion many points of interest were introduced and at the close of the meeting members were heard asking for more meetings of this type.

Niagara Peninsula.

Unfortunately, only a few of the members turned out for the January meeting, held at the Welland Club, Welland, but those who did attend were very well rewarded. The speaker on this occasion was Mr. Lloyd T. Bradley, C.G.A., of the Beaver Wood Fibre Co. Ltd., Thorold. Mr. Bradley spoke on "Accounting in the Paper Industry," and gave his hearers a real insight into the whole ramification of Paper Mill Accounting, dealing first with pulp wood costs before going into the actual paper mill accounting procedure. At the conclusion, many questions were asked and Mr. Bradley was heartily thanked for his very splendid talk. The next meeting will be on February 21st, when Mr. Charles Reitell, of Stevenson, Jordan & Harrison, of New York, will be the guest speaker. This is a joint meeting with Hamilton Chapter.

Kitchener.

For the January meeting of the chapter a fair number turned out to hear Mr. Alan J. Mouncey, of the Remington Rand Ltd., Hamilton. Mr. Mouncey gave a splendid talk on "Standardized Costs" and, as usual at Kitchener, had to answer many questions at the close. For one half hour

prior to the meeting a discussion period was held and it was quite an innovation. For the February meeting a Discussion Night is being held, and it promises to be a most successful evening.

London.

The January meeting of the London Chapter was somewhat of an innovation in that no guest speaker was present and a Discussion Night was held. The attendance was good and the discussion really excellent and other meetings of this type are planned. The February meeting will bring R. F. Bruce-Taylor, F.C.A., of the Foreign Exchange Commission, Ottawa, who will speak on "Foreign Exchange in Wartime". This will be on the 22nd, and on the 28th, the first meeting of the Student Group will be held.

Windsor.

One of the best attendances in the history of the chapter resulted when Mr. A. S. Fitzgerald, C.A., of Windsor, addressed the members on "Accounting-Accident and Modern". It was a grand meeting and the members enjoyed it immensely. On February 8th, the new Study Group held its first meeting when over thirty attended to hear a discussion led by John Wigle, C.A., and Harry Cox, C.A. It was a most enjoyable meeting and its success augurs well for the future of this Study Group .

On February 29th the speaker will be Mr. Walter J. Blackburn, Supervisor of Insurance with Hiram Walker & Sons Ltd., Walkerville. His subject will be "General Phases of Insurance," and on March 28th the chapter will hold a joint meeting at Windsor with the Detroit Chapter, N.A.C.A.

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The Control of Labour Costs

By

R. W. ASHLEY, F.C.A.A.

Factory Accountant, H. V. McKay Massey Harris Pty. Ltd. (A Lecture to the Australasian Institute of Cost Accountants, Victorian Division).

(Re-printed by Kind Permission of The Australian Accountant).

If by control we mean to direct, or regulate, a moment's reflection will bring a realization of the considerations involved in this subject. Some of these are employment, stabilization, absenteeism, employee training, accident prevention, plant layout, wage rates, labour-saving plans, idleness, defective equipment, time and motion study, job analysis, wage plans and indirect labour. Obviously we can only scratch the surface in to-night's talk, and I shall approach the subject from the viewpoint of the cost accountant rather than from that of the industrial engineer. This qualification at once eliminates many of the considerations which I have mentioned, such as initial employment, employee training, accident prevention, etc.

Labour costs are usually divided into two main groups—Direct and Indirect. Direct Labour has been defined as "that portion of labour which enters directly into and forms part of the product," and Indirect Labour as "subsidiary work done in connection with the manufacture of a product and which does not form a direct part of the product, but which contributes to its manufacture otherwise."*

Throughout the discussion, the type of control which I shall endeavour to outline is that which is based on standards, and I shall attempt to show how the standards are determined and the variances accounted for.

Establishing the Standard.

Standard labour costs may be and frequently are determined by a method of averaging based on historical records, but that seems to me to be a negation of control and to infer, rather, an acceptance of conditions without inquiry as to whether those conditions are amenable to improvement; improvement which can be made to give an increased reward to both the employee and to the industry.

Aims of Time Study.

A means to this improvement is time study—the method to find the time which should be taken to perform an operation or a series of operations. If time study be regarded as a way of ascertaining the number of hours it takes an average man to do a piece of work, then we are faced with the same type of objection as arises from the use of historical records for setting up standards; but it means much more than this. It means the subjecting of each piece of work to a close analysis, in order that all unnecessary and wasteful effort may be eliminated; in order that the quickest and best method of doing the job may be laid down, and in order that fatigue and irritation may be minimised. It also means a study of equip-

* American Management Association—Special Paper No. 10.

ment and tools, service of materials to the operators and working conditions generally. Thus time study does much more than merely set times. In fact, the setting of the time standard is the last thing to be done by the rate-fixer or time-study man. Before that stage is reached, the study involves the consideration of labour-saving tools, speeds and feeds, arrangement of work stands or benches, handling equipment, methods and movements of the operator, lighting, etc.

Job Analysis.

The first essential in time study is to analyse the job and everything required for its performance. This means breaking the job down into its constituent elements, and to do this the time-study man must know the reasons for and purpose of the operation and its relative importance in the product. He must know the ultimate function of the part in order to determine the degree of precision or finish which should be put into it. He must have sufficient knowledge to enable him to judge whether the tools in use are the most efficient for the purpose and to decide when a mechanical operation should be substituted for a manual one. He must know whether the tools and equipment are in good order. He must be able to judge if the material delivered to the operator is in a satisfactory condition after processes earlier in the production line. He has to consider whether the annual quantity of the part warrants the provision of special jigs and fixtures. These adjuncts of machine tools are costly and it is necessary to weigh the comparative advantages, from the cost point of view, of the labour-saving by using this equipment against the capital and maintenance charges arising from their creation. This can only be determined if the time-study man has knowledge of the quantity which will be produced before a change is likely to be made in the part when the fixture may be rendered obsolete. On these points he will find it helpful to confer with the cost accountant.

Service to Operators.

Another important aspect which the time-study man must examine is the service which other units provide and which materially affect the output of the operator under study. Inefficient service to a machine is, perhaps, one of the most fruitful causes of irritation and friction, because delay means loss of money to the operator and to the industry. There must be regularity of supply of parts and they should be placed in such a position as will reduce the effort and movement of the operator to a minimum. If the operator does not "set-up" his own machine (and frequently he does not) the work of the setter-up should be so planned as to ensure that there is no hold-up on any machine with consequent idleness of the operator. In cases where inspection of the first part "off" is required, the foreman of the shop should see that an inspector is at hand to make the requisite check and examination. However, despite the best-laid plans, adverse factors, beyond the control of the operator, will intervene and the time-study man must decide what time allowances should be made to protect the workman against loss if a piecework or bonus plan is in operation.

Equipment for Time Study.

It is very important that the equipment of the time-study man should be of a kind which will permit of him concentrating his full attention on the operator without distraction. I have seen some time-study equipments which strongly suggested that the time-study man himself was in need of study to eliminate his waste motions and excess effort. For ordinary purposes the equipment will comprise a board, a time-study form and a watch. The three should be so assembled as to be comfortably held and operated and to allow the observer to move freely without fear of dropping or disarranging any of his equipment.

Observation Board

These considerations can be met by having a board which is light and to which the watch can be fixed in a position to be worked by the left hand, leaving the right hand free to record the readings. The time-study forms should be firmly clamped to the board to prevent their moving. The watch is, of course, the most important part of the equipment.

Stop Watch.

The watch, which is graduated in hundredths of a minute on the main register and the lower hand, can be stopped by pressing the lever on the northwest corner, the upper hand continuing meanwhile. This enables the observer to make the entry on his sheet without interrupting the watch. The lower small register is graduated in seconds and the upper small register in minutes. The reason for using a decimal watch will become apparent later.

Observation.

All operations require a number of motions in their performance and the degree of skill necessary will usually provide an indication of the number of elements involved. It is the job of the observer to divide the job into its elements and the extent of the sub-division will depend upon the nature of the job itself, and upon the ability of the observer to observe and record the times. Obviously, the shorter the element, the greater is the degree of accuracy required in the time-study man. Therefore, the breakdown of the job must be conditioned by the skill of the observer.

Time-Study Form.

The form which we use is adapted from one which will be found in Time and Motion Study and Formulas for Wage Incentives, by Lowry, Maynard and Stegemerten (McGraw-Hill Book Co. Inc., New York). We have been using it for about two years and we have found it to do all the authors claim for it.

Recording Readings.

The easiest method of reading for the observer is the one whereby the watch is allowed to run continuously from the beginning of the observation until the end. The reading at the end of each element is recorded and the elapsed time is ascertained by subtracting the first from the second and the second from the third reading, and so on. This saves the observer

from worrying about elapsed times during the observation and permits him to concentrate on the more important work of recording the readings at the end of each element. Later, the necessary arithmetic is done by the clerical staff in the office.

Fixing the Standard.

The observation having been completed the next step is to determine the standard time and this should represent the time required by an operator of average skill and training under average conditions. This determination is, perhaps, the most difficult part of the time-study man's job, but a skilled observer, who knows the work, can readily assess the amount of skill and effort applied by the operator and gauge the conditions under which the operations were performed. There are several methods for establishing correct standard times from the data recorded in the study sheet, from straight average, after elimination of foreign elements and other abnormalities, to the levelling method. The difficulty arises from the fact that the studies cannot always be made of the operations of the average man working under average conditions. It is conceivable that the average man does not, in fact, exist in person and that there is no specific condition which is average. It becomes necessary, therefore, to apply some factor or series of factors to ascertained times to adjust them to average performance under average conditions.

Levelling Factor.

As I have said, there are many methods for determining what is reasonable for a worker of average skill and capacity under average conditions; but perhaps the best is that which provides a factor which is a composite figure derived from the application of four other factors to the recorded times. These factors are established for the four variables—Skill, Effort, Conditions and Consistency—and immediately on completion of the observation, while all impressions are firm in his mind, the time-study man makes his assessments and casts up the composite levelling factor. This, when applied to the arithmetical average of the recorded time, gives the net standard time.

Allowances.

It is inevitable that, throughout the course of the day, the operator will lose some time from one cause or another and it is advisable to set up standard time allowances to cover these losses. They arise from numerous causes and are inescapable under any conditions.

Incentives.

The allowance time is added to the net standard time and, if an incentive plan is in operation, a further addition is made to provide the bonus.

I cannot attempt to-night to discuss the very numerous wage payment plans which have been evolved, but there is a large quantity of literature on the subject, and anybody sufficiently interested will find useful reading in Wage Payment Plans that Reduced Production Costs, by Hugo Diemer (McGraw-Hill Publishing Company), which gives examples of the installa-

tion and operation of incentive plans in American industry. This book is very useful as an index of the literature on incentive plans, and the fundamental principles upon which they are established are outlined. It does not attempt to give more than an outline and the reader will find it necessary to read the authorities whom Diemer quotes.

Making the Contract.

When the study has been completed and the allowed time determined, the motion-study man shows the observation sheet to the operator, who is given an opportunity to study it. He then signs it, after which it goes to the Production Engineer or the Factory Superintendent for signing by one of those officers and the contract is complete. The allowed time thus established is never altered unless there is some change in the method, the equipment or the material, which, bona fide, alters the constituent elements of the operation. This point is important in that the making of the contract, and its strict observance while the conditions under which it was established remain the same, engenders confidence in the incentive plan and removes much of the suspicion with which organized labour has viewed piecework schemes. If there is confidence in the ability of the time-study man, there should surely be no reluctance to make a contract with the operator and, as a matter of good faith, no alteration should be made unless the conditions are changed. In order that the operators may be able to check their earnings, it is good practice to supply them with an account of their production and details of its piecework value on or before pay-day. This practice is particularly desirable when the operators work on a number of different operations during the course of the week, when it is difficult for them to keep a tally of the output and remember the allowed times for each job.

It has been my experience that, given accuracy in timekeeping, there are remarkably few questions arising from the piecework pay. Undoubtedly this general acceptance of the pay make-up is the outcome of the complete confidence which the men have in the employer's good faith in the observance of the contract.

Cost Control Direct Labour.

It will be obvious that, if there is a standard time for every operation and that the pay is computed on the basis of standard time earned, it is not very difficult to ascertain the operations and parts where performance has fallen short of the standard. When the pay-roll is compiled the operator's wages are calculated by multiplying the piecework hours earned by the award rate per hour. If the sum of the operator's earnings, so calculated, is more than his pay would have been at award rates, the standard time has been achieved. The standard costs are determined by multiplying the standard time for the operation by the standard wage rate for the particular class of labour. Thus if the standard time is achieved the standard cost equals the actual cost, provided there is no difference between the actual award rate per hour and the pre-determined standard rate per hour, which has been used for compilation of the standard labour costs. On the other hand, if the hours earned at the allowed times multiplied by the award

rate yields less than the actual time worked multiplied by the award rate, the operator's earnings under the incentive plan have to be augmented by the difference because the industrial award prescribes minimum rates of pay for each classification of labour.

Labour Variances.

It will be seen, therefore, that there can be two types of variances from standard cost from these two factors. One arising from a difference between the pre-determined standard wage rate and the other arising from failure to perform the operations in the standard times. These variances are taken to separate accounts in the control ledger. The standard wage rate is arrived at by making the best estimation possible from a study of the trends in the cost of living indices which the industrial courts use and from a consideration of any other probablities which are expected to arise during the period for which the standard is set. This estimation is not always as difficult as might appear and doubtless many of you know this from your own experience. Any loss or gain balance at the end of the financial year is for Production A/c. The other variance, from failure to earn premium, is usually due to the employment of green operators or to machine breakdown, waiting for material or the like. These differences are classified on the basis of cause and the department responsible is notified, as is also the Factory Superintendent. These costs, from whichever of these causes they may arise, are treated in the accounts as oncost, in which standard provisions have been made to meet them. It will occur to you that failure to attain standard time on the operations and, conversely, the amount of the piecework premium earned, will have an influence on the incidence of fixed and semi-fixed expenses; but the method of accounting for and controlling variances of this nature is outside the scope of our discussion to-night.

Other Labour Variances.

There are, however, other types of labour variances which have to be accounted for and examined. Under a complete system of standard costs there is a standard for everything and thus the specification of each of the products lays down the method by which each operation shall be performed and the class of labour which will carry out the operation. The standard costs are based on these specifications and any departure from them means that there may be a labour cost variance. An examination is made daily of the time cards for every operator and these are compared with the standard labour specification and the variances listed as to causes and departments. One copy of the report is referred to the Production Engineer for examination and action, and the other is extended and entries made in the appropriate variance accounts. Here again standard allowances are made in the standard costs to take care of these expenses. This type of variance may also affect the incidence of overhead.

Control of Direct Labour Force

It is necessary to refer to the form of control imposed on the direct labour force of the operating departments. I have already mentioned that there is a standard specification for all elements of cost and thus the product

specification lays down the standard time allowed for each class of labour in each department concerned in the production of the parts making up the product. It also lays down the elapsed time standard which is the net time before adding the allowance for incentive. Therefore, when a production programme is launched on the factory, and the schedule has been worked out for the date of arrival at the assembly line of each component, it is possible to compute the numbers of each class of labour which is required to do the work in each department or production centre. The movements of these parts through the operational cycle are recorded as they occur and the Production Control Department is in a position to know from day to day how many of each classification of direct labour there should be in each production centre.

Time as Basic Factor

Before going on to Indirect Labour Costs, I would like to stress the multitude of advantages which accrue from using time as the basic factor for the expression of labour cost standards. You are aware that practically all the literature on cost accounting which is worth while originates in the United States of America. If this is not wholly true, it is at least true to say that the best works written and published in the English language are American in origin; but because American industry has not, in the past, been subjected to industrial court control, as industry is in Australia, one of the principal problems in standard costing, which is met with in the Commonwealth, has had little attention by American costing authorities. Until quite recently wage rates in any given factory in the United States were unaltered for long periods of time, and if the rate for an operation were fixed at a dolar a hundred pieces, it would usually remain at a dollar until some substantial change in conditions affecting the operation took place. In Australia there is no such stability. Here the wage rates are subject to alteration on a quarterly index of the cost of living and consequently rates can be altered four times in a year. Moreover, frequent applications to the court by one or another union or by the employers result in alterations in margins and special rates and every so often one or the other party asks for a review of the basic wage, which, if granted, alters all rates of pay for those bound by the award. During the financial year 1938-39 four different basic rates have been in force—77/-, 78/-, 79/- and 81/-. Last financial year there were also the prosperity bonuses—two of 3/- each, as well as the alterations caused by movements of the index number. In factories where numerous classes of labour are employed and there are many operations, this instability of wage rates creates a very serious problem if the cost accountant builds his control structure on the basis of money. If, however, he uses time as the main medium through which to build standards and create controls for labour costs his problem is simplified tremendously. A piecework plan is not a condition precedent to the determination of standard operational times and I have already pointed out that if the piecework rates are expressed in terms of money the difficulty still remains. It is by no means impossible to establish standard times for operations if no incentive plan exists, and the benefits which can be derived from the use of time as the fundamental factor are manifold.

It has been shown that it provides the basis for the mechanism for determining labour costs and for production control. It is also the best basis for converting a sales budget to a production budget, for calculating the incidence of fixed overhead on varying volumes of production load, for determining a "normal" and for altering standards for labour and overhead in the terminal costs.

Control of Indirect Labour

The pay-roll analysis shows a complete analysis of the pay-roll for a production centre or department, and it will be observed that the items are classified in three main sections: firstly, "Therminal Accounts"; secondly, "Services to other Departments and Accounts"; and, thirdly, "Shop Charges." The first two columns are headed "Standard" and the second two have the date upon which the week ended at the top of them. The first show the standard time for the budgeted production and the standard cost, the second show the elapsed time and the actual cost for the week.

It will be seen that the principle of using time as the yard-stick of performance against standard is applied to indirect labour control as well as to direct for most of the items in the analysis are for indirect expense in one form or another. The first group comprises all that type of expenditure which falls within the definition of direct labour or it belongs to a class which goes to a terminal account in accounting structure. This class of wages expenditure does not ramify through the overhead distribution. It is burdened with its due quantum of overhead at the standard rate and passed into the accounts indicated by the items.

The second group comprises wages expenditure on services performed for other departments or for overhead expense accounts which are not chargeable primarily, or at all, to the Shop A/c in which the wages were paid. For example, the expenditure shown against Plant Maintenance may have been incurred against a job order from the Maintenance Dept. through the Plant Engineer. After the addition of overhead at the standard rate this expenditure will be credited out of the Shop Control A/c and is debited to the Plant Maintenance A/c for later distribution to the Shop A/c for which the expenditure was incurred. The position is the same with regard to Tool Maintenance.

The third group comprises wage expenditure, which is chargeable to the overhead of the shop itself. This analysis reconciles with the pay-roll for the department and is made every week for each department. The Standards are altered with such frequency as is necessitated by the change in volume of the load.

Some of the items in the Shop Charge group need explanation. "Overtime Allowance" means premium time and premium cost. The cost of overtime at normal day rates is charged to the account or item for which the overtime was worked.

"Made-up Wages" is the difference between award rates and piecework rates for operators who failed to make wages under the piecework plan.

Pattern and Template Attendance.—This is a service to pieceworkers, the work being done by day-work labourers, whose job it is to get the requisite equipment from the Template Room, etc., and give it to the operators.

Process Handling.—This is the wages expenditure within the department for moving semi-processed materials between one operation and another within the department. It is done by day workers.

Holiday and Sick Pay is charged as indirect when it is paid to certain employees, such as foremen and sub-foremen.

Rectification Work.—This represents the cost of making good defects due to faulty work in the department itself. The expense is, therefore, chargeable against the Shop A/c in contradistinction to a similar item appearing in the Services to Other Departments and A/cs group. In the latter case the expense of rectification is chargeable to some other Shop A/c where the fault arose.

Supervision takes care of the foreman's and sub-foreman's wages.

Clerical Work takes care of the departmental clerk's time and wages in shops which have a shop clerk.

General Shop Work covers the labour cost of oiling and greasing, lighting forges and furnaces before morning start and other miscellaneous functions.

Sweeping Floors is another housekeeping item.

Allocation of Wages shows the amounts paid for day work and for piecework, while "Time Worked" shows the hours worked day work and the hours worked under the piecework plan.

The number of effective persons is arrived at by dividing the total man hours worked for the week by the standard hours per week.

It should be made clear that the standards are not flexible; they are in fact altered when any change in conditions warrants an alteration. The most important consideration to watch is the reaction of the shop charge items to an increase or decrease in the volume of production load on the shop. As experience of this type of control is gained, it becomes possible to determine what indirect hours and expense are necessary for the efficient operation of the shop under different loads, and standards are established in the light of that experience for the varying level.

This analysis is examined by the shop foreman each week, and any abnormalities or lag in reducing indirect are brought to his notice. It is my experience that the shop foremen take a very live interest in the figures, which in turn enable them to make a valuable contribution to the control of labour costs.

A Major Factor in Industrial Costs

By
BERNARD H. YARDLEY,
Stanley Works of Canada Limited.

Before Hamilton Chapter, January 24th, 1940.

It is not my job—.

These are the words you hear so often expressed as an excuse for the ineptitude of so many people to assume any responsibility that requires a little extra effort. It is a phrase that expresses a lack of mutual endeavor to co-operate in the corporate interests.

It it is not my job—probably not, but whatever that job is, it carries with it a matter of responsibility for one thing more, and that is co-operation, which, as you know, is essential to the best corporate interests. It is with this thought that I, as a Purchasing Agent, have come to address this gathering to-night, because, obviously, the Purchasing and Cost Departments have a common problem in the pursuit of lower costs.

It would be presumptuous for me to come before you gentlemen and attempt to tell of the possible economies that may be effected in your particular sphere of activity. As Cost Accountants, you have studied every angle of your operating and overhead expenses; you have concentrated your attention toward improved efficiency of operation; determined ways and means of systematizing to avoid lost motion, and instituted practical methods of controlling all cost factors that come under your jurisdiction.

However, there is a very important element of cost that you are, for the most part, required to accept, and that element is a major influence on the success or failure of business operation. I refer to the procurement and control of raw materials, supplies, service and equipment, that must be purchased and for which the Purchasing Department is primarily responsible.

While the Cost Department must be dependable as the source of factual information as regards costs, and must be accurate in its interpretation of cost factors to give proper guidance to management, the Purchasing Department, too, has a great responsibility in contributing to the financial success of the Company operation. This you may well appreciate when you consider that, for every dollar in sales value of industrial production, approximately 57 cents goes into the purchase of raw materials and supplies.

It is a significant fact, then, that the Purchasing Department must be depended upon to regulate the cost of 57% of the industrial sales dollar, and to do this, the Purchasing Department requires every ounce of co-operation possible from other Departments, as well as from vendor organizations.

Because the cost of materials, services and supplies is so vital to industrial success, it is imperative that the Purchasing function be regarded as of particular importance if the business is expected to keep itself competitive.

The Purchasing Department is not a department of speculation, but the restrictions in this direction should not be so drastic as to restrain the

proper use of sober initiative, that experience and wisdom may dictate. Actually, that is why we have a Purchasing Department.

The Purchasing Department is expected to analyze values in their corresponding relationship to requirements, rather than as a comparison of intrinsic worth alone. Due consideration must be given to competitive values, quality standards, not only of the goods purchased, but also of the finished product; and thought must be given, too, to the reasonable limitations of service that may be involved.

Maximum value in the procurement of materials, supplies, and services obtained in a manner consistent with good business practice, is the goal of the efficient Purchasing Department. To achieve this goal, the Department must adopt the necessary means of procedure as will assure judicious control of every dollar of expenditure, and this can only be possible when intelligent, accurate, and complete information is readily accessible.

This is necessary because values of commodities and services are affected in so many ways.

For instance, the efficient Purchasing Department must keep abreast of the ever-changing conditions brought about by the developments in research and scientific discovery. Purchasing involves the necessity of constant study of commodities, the uses of materials, methods of production, market influences, tariffs, exchange, transportation costs, etc., in determining when, where, how, and what to buy.

All of these things affect the cost of goods and services, and, to buy profitably, it is necessary to keep informed on these matters, and also to be familiar with the trend of economic and social conditions, Government regulations, the legal requirements of commercial laws, etc., so as to be competent to intelligently appraise the effect of these things on the production, availability, quality, and price of goods required to be purchased.

In discussing the importance of the Purchasing Function in its influence on costs, I shall not attempt to trace through any of the technique of commodity buying, or go into the economic influences affecting market fluctuations and price cycles. I shall not devote any time to discuss the evolution in materials through the activities of Engineers in the fields of research and science, and the effect of these developments on the price structure. Neither shall I deal with the ever-growing tendency toward greater Governmental authority over our business transactions.

Rather, at the risk of appearing too elementary, I shall confine myself to some of the practical applications of purchasing efficiency

First, there must be a constructive purchasing policy. It must be a policy that gives consideration for the future as well as the immediate present, because the efficient Purchasing Department is measured on the basis of cumulative net results.

In recognition of this fact, the N.A.P.A. developed and adopted certain principles and standards by which the Purchasing Agent is expected to be guided in all his dealings and transactions.

These principles admonish the Purchasing Agent to practice:

Loyalty to his Company.
Justice to those with whom he deals.
Faith in his profession.

However, it is not sufficient to establish these principles. They must be applied by diligently and sincerely endeavoring to make them effective in all our efforts, not only in dealing with vendors, but also in our contacts with other departments of our own organization.

Goodwill and harmony within the organization are very important in achieving the ultimate in values for the best interests of the organization as a whole. Particularly is this true when problems come up for discussion which may disturb the opinions or individual interests of a particular department.

In these discussions, ideas and suggestions should be given receptive consideration so as to encourage individual initiative, which is so necessary to keep the organization in a healthy state of progressive development

In the application of this individual initiative, however, there are certain basic principles that must be subscribed to, to be assured that the organization will function in a manner that is compatible with the development of goodwill, both within and without its corporate confines. I do not need to emphasize that goodwill is the master key to success, and, therefore, the efficient Purchasing Department must be built upon the foundation and supported in its structure by this important asset—Goodwill.

Before passing along, I would like to quote an editorial on this subject, written by Mr. Herbert N. Casson, Editor of "The Efficiency Magazine", of London, England.

This editorial is entitled "Your Inside Competitors".

We have two kinds of competitors—sometimes we forget this. There are the OUTSIDE ones and the INSIDE ones.

The outside ones can't be got rid of. We have no power over them. All we can do is to beat them in efficiency. The inside ones are the worst. They cost us more money than the outsiders.

They are the Directors, or Managers, or employees who compete against us in our endeavour to build up our firms. The Director who messes up the organization by meddling with details and giving orders over the heads of Managers—he is an inside competitor.

The Manager who does not co-operate with the other managers—who builds a wall around his department—he is an inside competitor. The shop assistant who drove away thirty customers last year by indifference and aloofness—he is an inside competitor.

The Foreman who is disliked by his men—who is jealous of anyone knowing as much as himself—he is an inside competitor. The travelling salesman who is a mere order-taker—who misses two orders out of three—he is an inside competitor.

The Van Driver who is rude and abrupt when delivering his parcels—he is an inside competitor. The Typist who is habitually careless and misspells names of customers—she is an inside competitor.

The Buyer who buys according to his notions and his habit and his comfort, and refuses to see travellers—he is an inside competitor. Every firm has them, you see—these inside competitors. They are helping the outside firms you are competing with.

Once you get rid of the inside ones, by training or by elimination, you will have no serious trouble with the outside competitors.

Efficiency Magazine, London, England.

This editorial serves to illustrate how personal characteristics that conflict with a constructive co-operative policy, may be actually a destructive influence to the extent that the true policy of the Company may become an object of ridicule, and its value completely destroyed.

I shall not elaborate further here on the contribution toward success that can be effected through co-operation, expecting to say that the efficient Purchasing Department will not overlook the value of extending to the vendor, a sympathetic ear in the discussion of his problems, and co-operate with him, too, to encourage a spirit of mutual understanding and goodwill.

Purchasing and Sales people are jointly responsible for much unnecessary expense; in our failure, for instance, to sufficiently challenge exacting demands involving expense in meeting specifications that are not at all essential, in the insistence of unreasonable deliveries, in condoning a policy that involves repeated short runs without regard to vendor costs, and in any short-sighted policy that must ultimately bring mutually unprofitable results. You are as familiar with these conditions as I am, but the Cost Department can do much to expose them and so assist in correcting them.

As a simple illustration, for instance, there is the example of the policy of maximum and minimum stocks, which is carried to unreasonable extremes.

Not only are unit costs to the buyer affected, but so are the overhead costs of the vendor.

Co-operation is all that is needed to improve situations of this kind, to the mutual advantage of all concerned.

At the same time, Purchasing, to be efficient, must be vigilant in the pursuit of values. It must be conducted as a scientific challenge to the heavy bombardment of advertising and sales effort.

Every purchase must be on its merit, a climax to a thoughtful, intelligent, and thorough consideration of value to be received as compared with alternatives available.

In this respect, the Purchasing Department is in a large measure dependent on its ability to assemble clearly and concisely in readily accessible form, such facts and information as pertain to materials, supplies, and their uses, application, etc., required in the manufacturing processes.

It is the responsibility of the Purchasing Department to secure these facts, to study them, to analyze them for possible simplification and standardization, to determine if substitution may be practical in the interests of economy, and to be ever-critical in the pursuit of profit possibilities. Here is a place where the Purchasing Department can give splendid co-operation to the Engineering Department.

The Cost Department may be of practical assistance in making it possible to establish lower prices, if, when asking for price information, they give to the Purchasing Department as much information as is possible with regard to the nature of the material, the use it is to be put to, the quantities definitely involved and in prospect, etc. All this is important in arriving at a proper price, as for example in buying steel, we have to consider:

Basing Point.
Application of extras for—
Size.
Quality.
Condition, strips, coils.
Quantity.
The use the goods are put to—Tariff.

The essential records of the Purchasing Department are all prompted as an effort to assist in keeping costs at a minimum, by acting as a stabilizer that will keep the Purchasing Department within the orbit of an intelligent appraisal and performance of profitable, efficient purchasing.

However, the efficient Purchasing Department is not satisfied to appraise merit on the thoroughness of a mechanical routine, and neither is the efficient Cost Department.

The efficient Department studies the information built up on a system of records, constantly probing each item for possible opportunities to effect economies, and in this way developing new avenues of initiative that are definite profit possibilities.

I could give you many instances of savings effected, due to a study of this kind.

In one case, a certain specification for steel was detailed by the Engineering Dept. Examination indicated that it was quite satisfactory to change this specification, involving an increase of 5% in the weight of material to be used. However, the change permitted buying under a different price classification, and effected a net saving of 44% in price, without any loss of efficiency in manufacturing, but with the added advantage of improving the quality and strength of the product.

In another instance, it was found that 149 different sizes of steel were being bought and carried in stock, all of one grade of material. By a system of combining sizes, based on data assembled, it was possible to get along with only 21 instead of 149 different items. Accordingly, instead of buying a great variety of sizes in small lots, paying high prices for special sizes, small quantities, etc., it was possible to cut down the inventory requirements by more than 50%, with the added advantage in this case of reducing unit costs because of the ability to purchase larger individual items. I might also mention advantages in the saving of warehouse space, in greater flexibility of stock, because of the ability to use one inventory item for the production of several, instead of for only one individual product.

Another case in point had to do with a new article about to be manufactured. In this instance, the Engineering Department designed a special unit as part of the assembly. Before getting into production, the plans were discussed with the Purchasing Department, and the Purchasing Department was able to point out that a slight change in the design of the product would permit the use of a standard article to substitute for the special unit referred to, with the result that a much lower cost was established, and the item could be purchased from readily available supplies.

There are times, too, when it may be of some advantage to discuss with the Purchasing Department, proposals affecting the purchase of equip-

ment, with a view of determining whether or not the burden of maintenance and depreciation might be greater than the cost of having word done outside.

These same opportunities for economy existed in studies of supply items where it was found that small purchases were repeatedly made and by consolidating orders, substantial savings were effected, not only in money, but in time making out orders, passing accounts, and general clerical effort.

I have already said we cannot be satisfied with the efficiency of a system that functions only as a means of recording information. Efficiency means more than that. Then what is efficiency as applied to Purchasing, and as applied to cost.

Knowledge of your job—wisely analyzed—profitably applied—that is efficiency.

Let us add to this, greater co-operation in the use of the fund of information we are both constantly assembling—Cost Department and Purchasing Department—and we will do a much better job in our own contribution toward corporate success.

A System of Accounting for Material in a Factory*

By
"INVENTORY"
(D. L. Walker, A.A.A.)

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The accounting plan of a manufacturing business must be constructed to give the utmost control over material, as it is a most important element in the cost of goods produced for sale.

The necessary use of materials sets up problems among which are those of provision of suitable storage and handling facilities, protection against fire and pilfering, maintenance as the result of climatic conditions, as well as those problems associated with various aspects of finance for their purchase and maintenance.

It is seen then that the control of material from the accounting aspect will have two sides—

(a) Physical control.

(b) Financial control.

These are interlocked and accounting checks and recording should give the same control as that obtaining over all phases of the Sales Ledger and Cash Books.

The outline below is designed to achieve this purpose and illustrates a procedure which would apply in a coat factory. It should apply in principle, with the necessary alterations for specialized trades, to any factory production.

All material used in manufacture must pass through the stages of—

1. Designing and Budgeting for production.
2. Purchasing.

3. Receiving.
4. Storing.
5. Issuing.
6. Processing and assembling.
7. Recording—
    (a) Receiving Records
    (b) Stock Records
    (c) Cost Records
    (d) Financial Records.
8. Valuing of Finished Goods for sale.

Budgeting for Production.

The business will programme for an output based on prepared Sales forecasts and on the past records of costs and output which the finance available and capacity of the plant indicate will result in a profitable trading period.

For the purpose of this essay it is not proposed to enumerate methods of analyzing the financial structure or the production and distributing system of a business, but it has been assumed that proper methods have been used to launch it on a programme within its capacity to handle.

Production Basis.

Before going into production it will be necessary for the Production Manager to have samples of the model designed and prepared, and then compile a Material and Labour Register. The details contained therein will help to determine whether the model can be profitably produced, and if found satisfactory it can be adopted as standard. The Material Register will be divided into sections covering every model manufactured by the factory. Sections will contain in minute detail every piece of material required to manufacture the various models. Each model will be given a number and each part will have a registered symbol letter and number. The quantity of each part required to produce the model will also be noted. In addition to controlling the Material and Labour Register, the Production Manager will supervise—

(a) Orders received by the travellers, and
(b) Goods despatched.

A complete record will be maintained also of—

(a) Models in the course of production.
(b) Orders for models on hand.
(c) Completed models.

This will enable him to control the output of the factory and budget for future activities.

Purchase Routine.

The Production Manager, from past experience and previous records relating to production and sales forecasts, will control the Purchasing Office. Delivery of purchases will be timed to meet current production schedules and so benefit in the following ways—

(a) Maintenance of a minimum Stock Investment (securing a maximum turnover for the capital invested).
(b) Conservation of storage space.

(c) Ability of the storeman to speedily handle material without confusion and error.

(d) Minimising the cost of insurance rates (particularly where stocks are perishable or easily damaged).

The Purchasing Officer will receive a requisition for the various materials to be ordered, from the Production Manager, and his duty is to purchase according to specifications and as cheaply as good business permits. Official orders will be issued to the various suppliers specifying—

1. Delivery Date.
2. Description of Goods.
3. Packing Instructions.
4. Price.
5. Terms, etc.

These orders will be made out in quadruplicate and distributed as follows—

1. Vendor.
2. Receiving Office.
3. Records Office.
4. Retained for Reference.

The Purchase Office also controls faulty material returned by the storeman; claims for credit being made out on the supplier, and bearing the following information—

1. Purchase date.
2. Price.
3. Description of Goods.
4. Quantity.
5. Reason for return of Goods.

Claims will be made out in triplicate and distributed as follows—

1. Sent with the Goods returned.
2. Records Office.
3. Retained for Reference.

Receiving Routine.

The Receiving Office will be adjacent to the store, and all goods received for the factory must be signed for by the receiving clerk and accompanied by an invoice. Before accepting delivery the clerk will compare details of the invoice with the copy of the purchase order to see that the descriptions correspond and that the supplier is authorized to supply the goods. After signing for the material he will enter particulars on to an Inwards Goods Register in triplicate. This will contain details of—

1. Supplier's Name.
2. Description of Goods.
3. Order Number.
4. Value of Invoice.
5. Number of Packages.

When goods are not accompanied by an invoice, a pro forma must be made out and full details entered thereon. The invoices, pro forma invoices, and one copy of the register will be sent to the Records Office at the end of the day. Another copy of the register will be sent to the Purchase

Office for completion of their records whilst the remaining copy will be kept for reference.

Store Routine.

In charge of the store for the purpose of physical control of material will be a storeman assisted by one or several labourers.

The store will be situated in the most convenient position for the rapid handling of the material. The fixtures will be divided into suitable zones and fitted with bins or racks each bearing a number. On each will be a card ruled with the following headings—

Number, Item, Unit,

upon which the balance is extended after a physical count has been taken when the stock enters the store or when the Records Office has conducted test checks.

Alternatively, another type of card showing Receipts, Issues and Balance could be used and full details entered every time the material is handled.

The first method has several advantages, these being—

1. It enables the storeman to speedily handle material with less chance of mistakes being made.

2. The storeman has actual physical control and is relieved of clerical duties.

3. As periodical checks will be conducted by the office at random, greater care will be exercised by the storeman handling material.

4. It saves keeping records which would be a needless duplication of the office records.

When the goods enter the store from the Receiving Office, they will be unpacked and placed in front of the respective bins. They will then be checked in quantity with the packing slips and the storeman will carefully inspect each part. Tension tests will be taken to see that materials are in accordance with manufacturing specifications, and any part which is not up to standard will be returned to the supplier. The material will then be placed in the containers or racks and the new balance extended on the cards. The packing slips, after being signed as correct, will be sent to the Records Office for comparison with the actual invoices, any difference being noted and claims made accordingly. Any part which proves defective during the course of manufacture is also to be returned to the storeman for return to the supplier.

Issue of Material.

The storeman will issue material only on the written authority of the Production Manager on a proper requisition form. The requisition ensures that—

(a) No issue can take place without signed authority.

(b) A maximum of protection is given to the storeman.

(c) It discloses full particulars as to quantity and job, for accounting and recording purposes.

When the Production Manager decides to go into production with a special model, either for stock or to meet orders, he will, from the Material Register, determine the exact quantity of the various types of material required for the job. He will then fill out a requisition order on the store

for material needed. This requisition will be in quadruplicate, giving details of—

1. Model Number.
2. Material Quantities.
3. Stock Numbers.
4. Job Number.
5. Date promised for delivery.

The copies will be distributed as follows:—

1. To the storeman as a requisition.
2. } To the Factory Manager, who will be in close touch with the
3. } Production Manager on all matters relating to output.
4. To be filed with travellers' orders for reference.

The Factory Manager will hand the third copy on to the cutters for the work to be commenced. The cutters will then present their copy, duly signed, to the storeman when they receive the correct quantities of material. The cutters' copy will be sent to the Records Office by the storeman for costing and recording purposes. Any material returned to the store to be placed back into stock must be accompanied by a "Returned to Store" form for the purpose of absolute control. The storeman will sign for the material and send the form to the office, the duplicate being retained by the Factory Manager for reference. In other trades, requisitions must be signed by authorized persons, and may be issued from Production Department Managers direct to the storeman.

Assembly.

The factory must be planned in such a way that all work on the material is progressive in nature so that each department adds to the work done by the previous department until the finished article is produced. This movement could be likened to a snowball rolling down hill, as it gathers size on the way down.

During the course of production, a check must be instituted between departments, and this may be carried out by Departmental Managers supervising the work being done by employees under their control.

When the Factory Manager receives the two copies of the requisition order, he will stamp on both copies a "truck" number, the "truck" being properly fitted with the necessary sections to contain all the material for that job until completion. The cutter will then take the truck and his requisition to the storeman, who has, meanwhile, from particulars on his copy, cut and grouped the material for loading. The cutters' copy is dealt with as explained in the previous section. The material will then be cut according to pattern, replaced in the truck, and sent to the first section of the assembly. At this point a labour time card is attached to the truck, as costing records must cover both labour and material.

The time card, which is compiled from the Labour Register, will be sectionalized into departments and will cover every factor of assembly. As each department completes the work for which it is responsible, the relative section is torn from the time card and attached to the piecework book for wages compilation, etc. This procedure ensures that—

1. All material will be accounted for between departments, as no section will receive the truck unless all parts are intact.

2. The person last handling the truck is responsible for the material being correct.

3. Any particular piece which has been misplaced during previous operations is checked and found immediately.

4. The opportunity of misuse or pilferage in this stage is reduced to an absolute minimum, as a partially completed garment is of no use to anyone.

5. At any stage of manufacture and assembly it is possible, in a short space of time, to arrive at the value of incompleted contracts and partly finished goods by reference to the labour cards and material requisitions. By following out this system it is possible, at any point of time, to take a valuation of work in progress with a minimum delay and inconvenience to the factory staff.

When the last assembling section has completed the models, they are delivered to the Factory Manager, who inspects them, and checks them with both the material requisition and the particulars at the top of the labour card. After signature these forms are returned to the Production Manager, who will have invoices issued and arrange for the goods to be despatched. Goods manufactured for stock will be held by the Factory Manager and will be issued on receipt of a copy of the outwards invoice.

Records Office.

This section covers—

(a) Stock Records.

(b) Cost Records.

(c) Financial Records.

(a) Stock Records. Complete control can only be exercised by the records showing—

1. Quantities issued.
2. Quantities received.
3. Quantities on hand.
4. Value of stock on hand.

This perpetual inventory will—

(a) Give proper control over buying and slow moving stock.

(b) Enable proper accounting control to be exercised.

(c) Banish the necessity for physical stocktaking before preparing a monthly P. and L. Account.

(d) Investment can be kept at a minimum.

(e) A check can be kept on people handling the material physically and reduce the loss by pilferage.

The stock requisitions may be priced in a variety of ways——

Original cost.

Standard Price.

Market Value.

Average Price.

but the "Average Price" method offers the best means of control, as bad buying is not loaded on to one financial period and good buying also benefits future periods, so stabilizing costs. A mechanized system of the above accounts will ensure that the following facts are promptly available and will be progressively obtained—

(a) Mechanically proved quantity on hand of any item of stock.

(b) Mechanically proved value on hand of any item of stock.

(c) Mechanically proved aggregate value of any item of stock.

(d) Mechanically proved aggregate value of all stock on hand.

(e) Average cost of each item, which will enable a true valuation to be made at any time.

The principle of the system is that a conveniently ruled card or sheet is prepared for each stock item in the Material Register. This card will set out a description of the item, also the unit in which the quantities are to be recorded—this may be yards, dozens, singles, etc., the point determining this unit being the minimum quantity which is likely to be received or requisitioned for at any time. The selection of the unit on this basis eliminates the necessity for awkward fractions or odd denominations, thus weights can be better recorded in pounds than in tons, hundredweights, quarters, pounds. The cards would be headed with the distinguishing number and prefix letters in order to indicate the group into which the item falls, such as linings, tweeds, silks, serges, cottons, buttons.

Groupings of this nature can be arranged and a numbering system based on a number applicable to the major group, to the subsidiary section within that group, and to the unit item itself. Balances will be brought forward on to the headed cards based on a physical stocktaking. Inward stock will be

SITUATIONS WANTED

Young man, single, with many years' experience in Banking and Accounting. Graduate in Cost Accounting, and with experience as Office Manager, seeks change in position. Fully capable of taking charge, and remuneration asked only moderate for good start. Well recommended and is earnestly seeking a real opportunity to display knowledge and ability. Apply Box 45, "Cost and Management".

A thoroughly experienced Cost and Industrial Accountant desires position with sound company. Well versed in cost and production work and all phases of accounting. Experienced also in Office Management, Purchasing, etc. Particularly well versed in the Canning and Food Industry. Apply Box 48, "Cost and Management".

Cost Accountant, at present resident in Toronto, seeks position with progressive company. Particularly well versed in the Printing Industry, but has sound knowledge of Cost Accounting and is at liberty to go anywhere for good position. Apply Box 50, "Cost and Management".

Young man, at present engaged, seeks change to sound progressive company. Has had experience as Chief Accountant, Cost Accountant, Public Auditing, Payroll work, etc. Thoroughly practical and experienced. At present working in Ontario, but distance no object for good position. Box 51, "Cost and Management".

Young man, 10 years' bank expeirence, studying higher accounting and cost accounting, at present employed in Western Canada, desires position with industrial company with prospects of advancement to good man. Will go anywhere. Apply Box 52, "Cost and Management".

Young man, 25 years of age, with eight years' experience as Bookkeeper and Accountant, desires position with sound organization. La Salle graduate. Excellent references. Apply Box 55, "Cost and Management".

Young man, married, with many years' experience in Accounting, Cost Accounting and Purchasing, Office Management, etc., at present employed in Mining Office, seeks change. Would prefer position with sound company in Mining Industry or Industrial company. Distance no object if position is sound. Highest references. Ability unquestioned. What have you? Apply Box 56, "Cost and Management".

posted direct from inwards invoices, and where the price varies from the previous average, the new average price would be computed on a calculating machine by dividing the total quantity on hand into the value on hand.

Outward stock is posted from the stores requisitions, the number of the requisition being entered in the reference column of the card and the quantity and value in their respective columns. With all postings the machine automatically adds inwards stock and subtracts outward stock from the previous balance, mechanically extending the new quantity balance and new value balance at the same time. At the same time the information is reproduced on a summary sheet which travels through the back of the machine so that it shows the postings to each individual account, also the respective new and old balances. The machine also accumulates the total quantities and values posted, and these figures are balanced with a predetermined total of the posting media, providing a daily check on the accuracy of the entries.

Where necessary the totals can be extracted according to the various sections of the stock ledger and taken by the machine to control accounts, which will give the aggregate balance on that section. This total figure will not have any meaning in relation to the quantity column, as yards, dozens, etc., will be accumulated purely for the purpose of checking the mechanical accuracy of the work. The value figure will, however, have a very important significance owing to the fact that it discloses the actual investment in stock in each section. The summary sheet will proceed to the calculating machine operator, who will multiply the average price by the quantity balance on each line to see that the result agrees with the balance of value. This imposes a comprehensive check that—

(a) The operator has posted both quantity and value correctly.

(b) Previous balances of quantity and value have been correctly picked up.

(c) The requisition has been correctly rated.

(d) The average price has been correctly computed.

(e) The postings have been made to the right account.

In certain cases where a large number of postings are involved, it will be found necessary to interpose a preliminary routine between requisitions and posting process. This becomes especially necessary where there are a large number of requisitions each containing a multiplicity of stock items. In such cases it would be found desirable to list the items on to unit slips and then sort these according to stock numbers, the duplicate of the summary sheet being short-carboned so that the value column is not disclosed. This copy may be used to check the physical stock keeping at intervals. The above system thus provides a checked perpetual inventory enabling quick action to trace and adjust differences and laying the basis for complete accuracy and balances, which at the end of any financial period must be in accord with the adjustment account kept in the financial ledgers.

(b) Cost Records. Job cards will be made out in the Costing Office for each particular job in production, and as the work proceeds details of the value of material used and labour costs will be entered on these cards for the purpose of controlling costs in production.

The material requisitions which have been priced and used in the stock ledgers will now be utilized for the recording of the value of material on the job cards. This can be done by listing full details on to a materials summary covering all jobs, and carrying periodical total to each individual job only.

Alternatively, by machine, the material could be posted to each individual job card and the materials summary obtained automatically on the summary sheet running through the back of the machine.

(c) Financial Records. Control Accounts. Purchase invoices, after being checked with the supplier's statement, will be entered on to the purchase journal and the total will be entered—

Dr. Materials and Supplies Account.

Cr. Trade Creditors.

The total value of material, obtained from the materials summary, will be—

Dr. to Work in Progress.

Cr. to Material and Supplies.

All indirect charges relating to materials will be debited to manufacturing expenses and credited to materials and supplies. Where different classes of material are stored separately, it is advisable to maintain separate stock accounts. Material in transit would not be merged in the ordinary stock accounts, but would be handled through special material in transit accounts.

Stocktaking.

The financial or perpetual stock records make the half-yearly stocktaking routine a check only against the stock ledger.

When discrepancies are discovered, either at this period or during the course of the year, owing to theft, damage or errors in issuing, adjustments are necessary to clear the accounts and stock records of their value. If these amounts are large, searching investigation must be made to try to trace the job on process which should be charged with the value. The adjusting entries, if small, will be carried out as a—

Dr. to Stock Adjustment Account.

Cr. to Materials and Supplies Account.

When the balance-sheet is being prepared, consideration must be given to the value of the raw material stock, either at cost or market value, whichever is the lower. If stock is to be written down, stock accounts and detail records must be adjusted. The loss may be charged as a manufacturing expense and spread over all production, or it may be charged direct to the profit and loss account as a part of the cost of sales.

It will be realized that with proper supervision, a monthly profit and loss statement will be readily available, and so decide the future activities and programme of the business.

* This essay shared first place with an essay by "Minor" (J. R. Ballantyne) in the 1939 Essay Competition conducted by the Victoria Division of The Commonwealth Accountants Students' Society.